

ON SOME NEW SPECIES AND RECORDS OF AUSTRALIAN AND  
NEW ZEALAND COLLEMBOLA.

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Suborder ARTHROPLEONA Börner, 1913.  
Superfamily PODUROIDEA Womersley, 1933.  
Family HYPOGASTRURIDAE Börner, 1913.

Genus BRACHYSTOMELLA Agren, 1903.

*Brachystomella granulata*, sp. nov.

(Text fig. 1, a-b.)

*Description*.—Length, 1.15 mm. Colour, uniform brownish-black. Facies normal. Antennae shorter than head; ratio of length of segments I : II : III : IV = 15 : 15 : 15 : 20, IV with 4-5 olfactory setae, III with normal sensory organ. Claws without inner tooth; tibiotarsus with one long dorsal clavate seta; empodial appendage absent. Furca absent. Integument strongly granular; cloth-

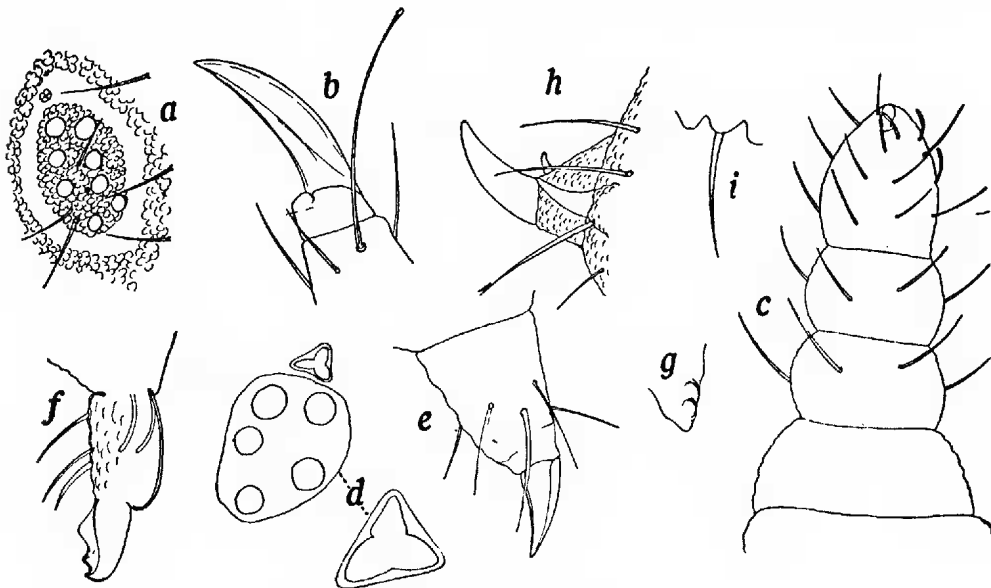


Fig. 1.

a-b *Brachystomella granulata*, sp. nov.  
c-i *Odontella trispina*, sp. nov.

ing of sparse but fairly long setae, which are rather blunt at the tip. Ocelli, 8 on each side on dark fields, equal. Postantennal organ present, smaller than a single omma and with four peripheral lobes around a central boss.

*Locality*.—From a fungus in small numbers at Wartook, Victoria, 14/5/34 (R. V. S.).

*Remarks.*—In the absence of the furca this species is closely related to *B. afurcata* Womersley, but differs in having only a single clavate tibiotarsal seta and in the more granular integument, as well as the finer body setae.

BRACHYSTOMMELLA AFURCATA Womersley, 1933.

I have recently received a large number of specimens of this species from Veitch, South Australia, 7/35 (R. L.), and from Temby, Victoria, 7/35 (R. T. M. P.).

BRACHYSTOMMELLA GENICULATA Womersley, 1934.

Originally described from South Australia, examples of this species have been received from Darlington, Western Australia, from leaf mould, 7/35 (M. E. S.).

Genus ODONTELLA Schäffer, 1897.

*Odontella trispina*, sp. nov.

(Text fig 1, *c-i*.)

*Description.*—Length, 0.55 mm. Colour, purplish-brown. Antennae short, only three-fourths the length of head; ratio of segments I : II : III : IV = 10 : 6 : 6 : 12, olfactory setae on IV three or four, sensory organ on III not determined. Ocelli, 5 on each side, equal, on dark fields; postantennal organ large, slightly larger than a single omma, triangular with 3 lobes. Tibiotarsus without clavate setae; claws strong and short, without inner tooth; empodial appendage absent. Furca well developed, mucro and dens subequal, mucro with apical and subapical teeth and inner lamella with prominent median triangular lobe, dens with 3 setae. Anal horns three, the middle one long and on long papillae, the horn itself as long as claws; lateral horns adjacent to median papilla and on small papillae. Cuticle finely granular with sparse but fairly long and fine setae.

*Locality.*—Several specimens from moss from Myponga, South Australia in April, 1935 (R. V. S.).

*Remarks.*—This species is abundantly distinct in the structure of the anal horns and of the mucro. The only other species known from Australia is *O. lamellifera* Axels., which is possibly an introduction.

Genus PARANURA Axelson, 1902.

This is a rare genus only represented by two species, namely *P. sexpunctata* Axels. with its variety *claviseta* Axels. from Europe, and *P. sexpunctata* var. *colorata* Mills. and *P. coeca* Folsom from America. It has not, hitherto, been found in Australia.

*Paranura australasiae*, sp. nov.

(Text fig. 2, *a-d*.)

*Description.*—Colour in spirit white. Length, 1.27 mm.; width, 0.55 mm. Antennae slightly shorter than head, tapering, ratio of segments I : II : III : IV = 3 : 3 : 2½ : 4, IV with 6-7 curved olfactory setae, sensory organ III as described for other species. Ocelli, 2 on each side of a large central head boss of raised tubercles, unpigmented. Claws small, simple, without inner tooth; empodial appendage small and tuberculate. Cuticle coarsely granular, the granules arranged in bosses or clusters similar to those of *Achorutes hirtellus* var. *cirratus* Schött.; on the head is a large triangular boss and on each side a moderately large one, and subposteriorly a pair of smaller bosses; abdomen IV carries 4 bosses and V 2. The anal segment is without bosses, and those on the anterior abdominal segments are indeterminate. Segment VI of abdomen visible from above, simple, not bilobed. The clothing is of long, fine, simple setae. Furca and anal horns absent.

*Locality.*—A single specimen from You Yang Mountains, Victoria, 9/31 (Miss J. R.).

*Remarks.*—This species has superficially the facies of *Achorutes hirtellus* var. *cirratus* Schött. except for the simple sixth abdominal segment, shape of antennae and arrangement of tubercular bosses. Its nearest relative is *P. sexpunctata* var. *claviseta* Axels., from which it differs in the absence of clavate tibiotarsal setae and the presence of the tubercular bosses.

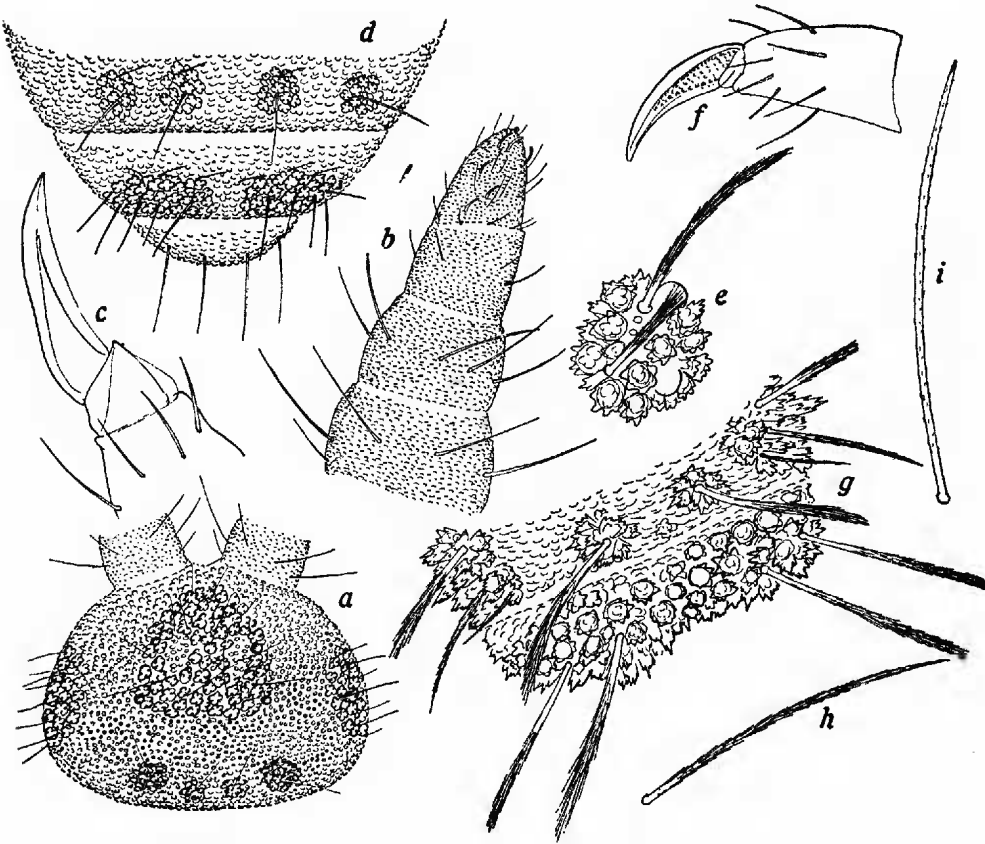


Fig. 2.

a-d *Paranura australasiae*, sp. nov.

e-h *Achorutes hirtellus* var. *cirratus* Schött.

i " " var. *schött.*, n. var.

Genus *ACHORUTES* Templeton, 1834; Börner, 1906.

*ACHORUTES HIRTELLUS* Börner, 1906, var. *CIRRATUS* Schött, 1917.

Syn. *Achorutes cirratus* Schött, 1917.

*Achorutes hirtellus* Handschin, 1926.

*Achorutes cirratus* Womersley, 1933.

*Achorutes* sp. sub. *hirtellus* Handschin; Denis, 1933.

(Text fig. 2, e-h.)

Handschin (Treubia, 1926), in his description of Javanese specimens which he referred to Börner's species, notes that they differed in the absence of the inner tooth to the claw. He also suggested that should the granular fields be

localised on the integumentary bosses in Schött's species, *A. cirratus*, then this species would be synonymous with Börner's.

Denis (Boll. Lab. Zool. Portici 27, 1933), in his valuable key to the world species, points out that Handschin figures 3 eyes on each side, although 2 only are referred to in the text. Because of this discrepancy he refers Handschin's material to a subspecies of *hirtellus* Börner, but refrains from attaching a name. Denis does not, however, mention that Handschin also shows the ocelli as distinctly pigmented, although his text gives them as unpigmented.

A re-examination of all the Australian material which I have hitherto placed as *A. cirratus* Schött convinces me that they agree entirely with Handschin's diagnosis of *hirtellus*, except for the discrepancies referred to above. One can only conclude, therefore, that these are errors; in fact, a scrutiny of the figures rather gives this impression.

With regard to Handschin's query as to the granular fields, all the material I have studied of *cirratus* shows them as localised on the bosses. In addition, *cirratus* also lacks the inner tooth to the claw as in Handschin's *hirtellus*. It seems undoubted, therefore, that the Javanese specimens which were placed by Handschin as *hirtellus* Börner are the same as Schött's *cirratus* from Australia, although both differ from *hirtellus* of Börner in lacking the tooth to the claw. The Australian *cirratus* Schött (= *hirtellus* Handschin nec Börner) is, therefore, a varietal form of *hirtellus* Börner.

It remains to be remarked, however, that while Schött's figures, especially of the apical abdominal segments, do not agree with those of Handschin, they are by no means convincing. The line around the granular fields, which apparently represent the integumentary bosses, must surely be more or less imaginary; in fact, it does not exist on any specimens which I have been able to study. The setae are also not at all like those seen by Handschin and myself on the dorsal surface. On some of the anal segments, particularly ventrally, there are, however, some setae which are pointed and tapering and furnished with comparatively short ciliations, which may be similar to those figured by Schött.

Var. **schotti**, var. nov.

(Text fig. 2, i.)

Two specimens found in a fungus from Millbrook Reservoir, South Australia 6/35 (R. V. S.), do not differ from the preceding except that the dorsal setae are all tapering to a point and are entirely without ciliations, being only minutely serrated. Another specimen, previously recorded as *cirratus* Schött, from Kumara, New Zealand (E. M. M., 1930), has also such setae. Both these examples I place as the above new variety.

ACHORUTES NEWMANI Womersley, 1933.

Additional records for this species are:—Belgrave, Victoria, 11/31 (H. G. A.); Sherbrook Falls, Victoria, 11/31 (D. C. S.); Waterfall Gully, South Australia, 5/34, 9/33 (R. V. S.); Mount Gambier, South Australia, 5/34 (R. V. S.).

*Remarks*.—The specimen from Waterfall Gully, South Australia, 9/33 (R. V. S.), is remarkable in that when first placed in spirit the eyes were deeply pigmented.

KEY TO THE AUSTRALIAN AND NEW ZEALAND SPECIES OF ACHORUTES.

- |   |   |
|---|---|
| 1. Three ocelli on each side.   | 2 |
| Two ocelli on each side. Colour white or pinkish, the latter soluble in spirit.   | 3 |
| 2. Colour in life, creamy. Claws without inner tooth. Tubercles as in <i>A. muscorum</i> Tmpl. Setae strong, blunt with fine indistinct serrations. Ocular bosses with three setae. |   |

*A. newmani* Womersley, 1933

Colour blue, pigment insoluble in spirit. Claw without tooth. Segment VI visible from above, V not much longer than IV, lobes of VI separated, VI with four well separated bosses. No granular fields.

3. Cuticle without distinct granular fields around the bosses. *A. muscorum* Templeton  
Dorsal setae smooth, simple. Colour in life, rose pink.

Cuticle with distinct fields of granules around the bosses. Dorsal setae at least with minute serrations. Claw without inner tooth (except *A. hirtellus* Börner, 1906; f.p.). 4

4. All dorsal setae tapering and pointed, with minute serrations.

All dorsal setae ciliated, those on dorsal bosses brush-like. *A. hirtellus* var. *schötti* var. nov.

*A. hirtellus* var. *cirratu*s Schött

Family ONYCHIURIDAE (Lubb., 1867) Börner, 1913.

Subfamily TULLBERGINAE Bagnall, 1935.

Genus TULLBERGIA Lubbock, 1876.

*Tullbergia gambiense*, sp. nov.

(Text fig. 3, a-c.)

*Description*.—Colour, white. Length, to 1.5 mm. Antennae slightly shorter than head, ratio of segments I : II : III : IV = 10 : 11 : 17 : 20, IV with apical knob and apparently no olfactory setae, sensory organ on III with 2 long free but not stout blunt setae, the outer one slightly curved, the inner straight, III is apparently also without a mediolateral sensory seta. Postantennal organ with 60-80 tubercles. Claws stout with fine inner tooth just beyond the middle; empodial appendage present, stout at base and gradually tapering to a point which reaches the inner tooth of claw. Anal spines two, short, three-fourths the length of claw. Pseudocelli large, 20  $\mu$  in diameter and arranged as follows: ant. base 1, base of head 1-1, th. I-II 0-0, III 1-1, abd. I 0-0, II-V 1-1, VI 0-0. Cuticle granular.

*Locality*.—Numerous specimens from moss and humus from Mount Gambier, South Australia, 16/5/34 (R. V. S.).

*Remarks*.—Bagnall (Ann. Mag. N. Hist. v. 15, ser. 10, Feb., 1935, pp. 236-242) has recently revised the old genus *Tullbergia* Lubb., raising it to subfamily rank and resurrecting the old and lapsed genera *Stenaphorura* Absolon, 1900, and *Mesaphorura* Börner, 1901. In the genus *Tullbergia* s. str., he places all the Antarctic species with the exception of *T. spinosissima* Wahlgren, 1906. As so restricted he regards the genus as essentially an Antarctic one, but he has overlooked my records of *T. trisetosa* from South Australia and Victoria (Trans. Roy. Soc. S. Aust., vol. lvii, p. 68, 1933) and my description of *T. australica* from Western Australia and Victoria (*loc. cit.*, p. 68). The species described in this paper is another member of the genus, which now comprises five species, of which three are Australian forms. Their relationships are best given by the following key:—

KEY TO THE SPECIES OF TULLBERGIA (LUBB., 1876) s. STR. BAGNALL, 1935.

1. Empodial appendage absent. Antennae III with 3 rod-like clubs to sensory organ; without accessory mediolateral rod-like club. Large species up to 4.0 mm. *T. antarctica* Lubb., 1876  
Empodial appendage present. Smaller species. 2
2. Accessory mediolateral rod-like seta on antennae III absent; sensory organ on antennae III with only 2 rod-like setae. Postantennal organ with 60-80 tubercles. Anal spines three-fourths the length of claw. Claws with fine medial inner tooth. *T. gambiense* sp. nov.  
Accessory rod-like seta on antennae III present. 3

3. Sensory organ on antennae III with 3 rod-like setae. Anal spines large, twice the length of claw. *T. trisetosa* Schäffer, 1897  
= *quadriseta* Willem, 1902 4
- Sensory organ on antennae III with only 2 rod-like setae.
4. Anal spines longer than claws. Postantennal organ with 70-80 tubercles. *T. bisetosa* Börner, 1903  
= *T. insularis* Wahlgren, 1906
- Anal spines smaller, about one-fourth length of claw. Postantennal organ with 60 tubercles. *T. australica* Womersley, 1933

Genus MESAPHORURA Börner, 1901.

MESAPHORURA KRAUSBAUERI Börner, 1901.

This European species, which is widely distributed in many parts of the world, has been sent to me from leaf-mould from Darlington, Western Australia, in July, 1935 (M. E. S.).

Genus DINAPHORURA Bagnall, 1935.

This generic name has been proposed by Bagnall (*loc. cit.*, p. 241) for the interesting form, *Tullbergia spinosissima* Wahlgren, 1906, from the Antarctic. The genus is characterised by the anal segment having nine horns, of which the two anal ones are long and strongly curved, the others not being so strongly chitinised. In this paper two further species are described which must be placed

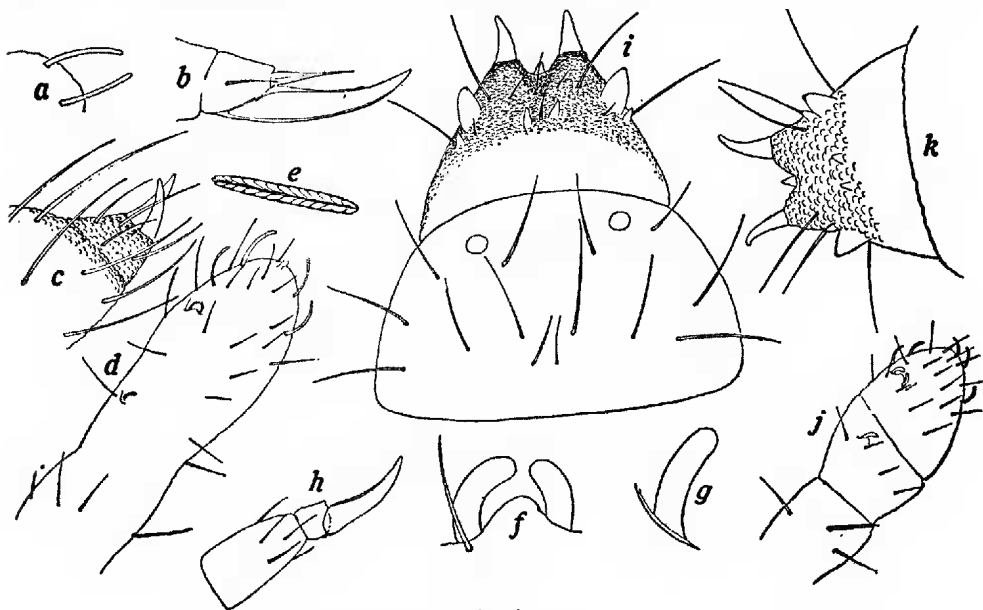


Fig. 3.

- a-c *Tullbergia gambiense*, sp. nov.  
d-i *Dinaphorura diversispina*, sp. nov.  
j-k „ *novae-zealandiae*, sp. nov.

in the same genus. From a study of these additional species, the following features of probable generic value must be noticed: the characteristic sensory organ of the antennae which is normally on the third segment is placed latero-medially on segment IV, segment III only carrying the solitary accessory club which is subapical and sublateral in position. The postantennal organ also is relatively short, with few tubercles, and these inclined to the long axis.

**Dinaphorura diversispina**, sp. nov.(Text fig. 3, *d-i*.)

*Description*.—Length, to 1.95 mm. Colour, white, except for the major anal horns which are yellowish. Antennae as long as the head, ratio of segments I : II : III : IV = 20 : 20 : 15 : 25, IV with a small apical knob and 5-6 long olfactory setae and a complex sensory organ at the middle of the outer edge, which is homologous with that usually found on the third segment in other genera of *Tullberginae*; this organ consists of a pair of stout curved rods, one on each side of a cuticular prominence or fold, and a guard seta behind; III with only a single stout curved rod on the inner side. Postantennal organ as figured with about 20 inclined adpressed lobes. Legs without clavate tibiotarsal setae; claws simple, without inner tooth; empodial appendage absent or represented by a minute stump. Anal spines 9, arranged as follows: a pair of long, well-chitinised posterior spines on large papillae; a blunt, spine-like process on each side, immediately behind these is a row of four similar but smaller processes, ventrally and between the anal spines a single small process. All segments of thorax and abdomen to V with a posterior sublateral pair of large pseudocelli; in addition there is one on each antennal base and two on the back of the head. Clothing of rather long but sparse setae.

*Locality*.—In small numbers under stones along the bank of the Onkaparinga at Mylor, South Australia, 23/10/34 (H. W.).

*Remarks*.—From *D. spinosissima* (Wahlgren) this species differs in the anterior row of anal spines or processes being smaller than the others.

**Dinaphorura novae-zealandeae**, sp. nov.(Text fig. 3, *j-k*.)

*Description*.—Length, 0.9 mm. Colour, white. Antennae as long as the head, ratio of segments I : II : III : IV = 10 : 10 : 10 : 15, IV with 4-5 strong olfactory setae and at one-third from apex with a complex sensory organ as in the preceding species, III with a single stout curved rod placed medio-laterally. Claws simple, without inner tooth; empodial appendage wanting; clavate tibiotarsal setae wanting. Anal spines 9, as follows: a pair of strong posterior normal anal spines on stout papillae and the spines plus papillae half as long again as the claws, an anterior row of four blunt stout spine-like processes the middle pair of which are smaller than the lateral ones, between this row and the posterior spines is a small process on each side, and ventrally between the posterior spines is a small process. Pseudocelli large, 12  $\mu$  in diameter, arranged as follows: one on each antennal base, a pair on the back of the head and a pair on each thoracic and abdominal segment to V. Clothing of sparse, long and fine setae. Postantennal organ as in the preceding species.

*Locality*.—This species differs from the preceding in that the intermediate lateral anal processes are very much smaller than the posterior lateral ones. In *D. diversispina* these processes are much larger and about as long as the posterior anal spines. In Wahlgren's species the medial and posterior lateral processes are equal and about half the size of the posterior anal spines.

Superfamily ENTOMOBRYOIDEA Womersley, 1934.

Family ISOTOMIDAE (Schäffer, 1898; Börner, 1913).

Genus ISOTOMODES PRODUCTUS (Axels., 1907).

This well-known European species, previously recorded by the writer from Australia, has now been sent to me from Christchurch, New Zealand, 6/35 (L. M.).

## Genus FOLSOMIDES Stach, 1922.

## FOLSOMIDES EXIGUUS Folsom, 1932.

(Text fig. 4, a-d.)

*Locality.*—A number of specimens from moss taken at Fish Falls, Wartook, Victoria, 30/12/34 (R. V. S.).

*Remarks.*—It is extremely interesting that a representative of this genus should occur in Australia, and, particularly so, that it should agree with the species described by Folsom from Hawaii. Altogether five members of the genus are known: the genotype *F. parvulus* Stach. from Europe, the remainder from the New World and Australia. In his description of *F. parvulus* and *F. exiguus* Folsom, unfortunately, does not clearly indicate the specific differences. In correspondence, however, he has been kind enough to furnish me with drawings and further details, so that in the following key, which is an elaboration of that given by Mills (Collembola of Iowa, Collegiate Press, 1934, p. 43), all the known species can now be dealt with dichotomically.

## KEY TO THE SPECIES OF FOLSOMIDES STACH.

- |  |  |
|--|--|
| 1. One eye on each side.   | 2  |
| Two eyes on each side.   | 3  |
| 2. Empodial appendage very short, not extending beyond one-fourth of length of claw. | 2  |
|  | <i>F. americana</i> Denis, 1931<br>Costa Rica.       |
| Empodial appendage from one-third to one-half the length of claw.                    | 3  |
|  | <i>F. stachi</i> Folsom, 1934<br>U.S.A.              |
| 3. A long tibiotarsal seta present. Ratio of antennae I : II = 1 : 2.                | 2  |
| Postantennal organ bent. Muero separated from dens.                                  | 2  |
|  | <i>F. parvulus</i> Stach, 1922<br>Europe.            |
| No long tibiotarsal seta.  | 4  |
| 4. Eyes unequal, posterior one the smaller.  | 2  |
|  | <i>F. exiguus</i> Folsom, 1932<br>Hawaii, Australia. |
| Eyes equal.  | 3  |
|  | <i>F. parvus</i> Folsom, 1934<br>U.S.A.              |

## Genus ASTEPHANUS Denis, 1927.

This genus was erected by Denis for the species *A. linnaniemi* Denis. from Italy (Annals. Sci. Naturelle). His generic characters may be translated thus:—

“Isotomid facies, with a tendency to that of *Cryptopygus*, provided with a well recognisable pronotal plate, granular integument, furca, empodial appendage and a very complete antennal organ III flanked by two olfactory setae. Differs from *Anurophorus* Nicolet in the granular integument and the presence of a furca and empodial appendage. Differs from *Pseudanurophorus* Stach in the more granular integument, the absence of anal papillae and the presence of the furca. Differs from *Tetracanthella* Schött in the granular integument and the absence of the anal spines. Differs from *Proctostephanus* Börner in the six abdominal segments, its less *Cryptopygus*-like facies, the more primitive antennal organ III and the absence of the anal crown of tubercles. Differs from *Börnerella* Denis in the complete furca, less *Cryptopygus*-like facies and the more complex antennal organ III.”

The species described below from Australia closely approaches the solitary member of the genus in its general facies, eye formula, distinct and fully-developed furca, presence of an empodial appendage, structure of antennal organ III and the presence of a distinct pronotal plate, although the last is perhaps not so distinct as in the genotype. The six abdominal segments are all distinct, and the anus is terminal or only slightly ventral in position. It differs from the generic characters given by Denis in the lack of cuticular granulations, but this does not warrant a generic separation.



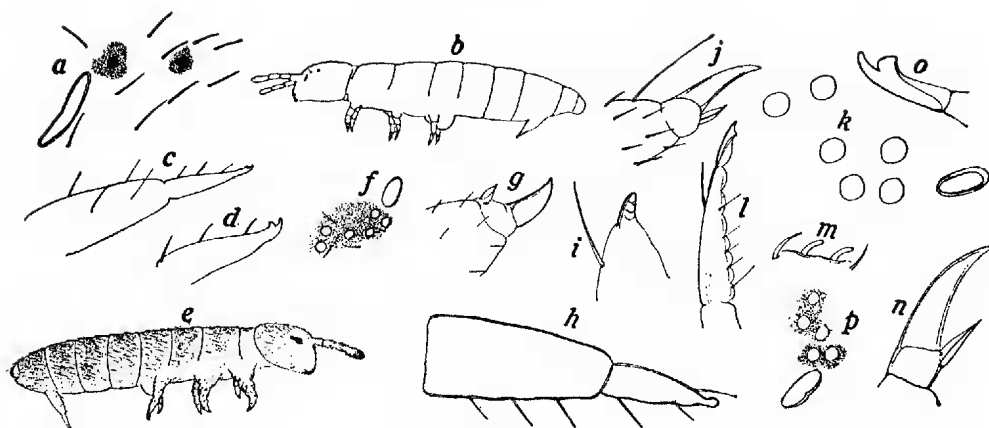


Fig. 4.

*a-d Folsomides exiguus* Fols.

*e-i Astephanus denisi*, sp. nov.

*j-l Proisotoma brisbanensis*, sp. nov.

*m-p Isotoma decemoculata*, sp. nov.

#### ***Astephanus denisi*, sp. nov.**

(Text fig. 4, *e-i*.)

*Description*.—Length, to 0.6 mm. Colour almost entirely bluish-grey, under high magnification the pigment is seen to be roughly arranged hexagonally. Cuticle smooth, not granular. Antennae as long as head, ratio of segments I : II : III : IV = 5 : 7 : 7 : 15, IV apparently without olfactory setae, III with sensory organ as described for *A linnaniemi* Denis. Ocelli, 6 on each side on a patch of pigment (*cf.* fig.); postantennal organ quite twice as long as an anterior ocellus, broadly elliptical. Dorsal pronotal plate distinct. Claws without inner tooth; empodial appendage present and similar on all feet, with inner and outer lamellae; tibiotarsus without clavate setae. Furca well developed; manubrium half as long again as the mucrodens, with three ventral setae; mucro not demarcated from dens but appearing as a small apical rounded lobe or knob; dens with two ventral setae and one subapical dorsal seta which overreaches the tip of mucro. Rami with 3 barbs, tenaculum with a strong seta. All abdominal segments distinct, III and IV subequal. Anus terminal or slightly ventral. Clothing of fairly numerous short fine setae.

*Locality*.—In numbers from moss from Fish Falls, Wartook, Victoria, 30/12/34 (R. V. S.).

*Remarks*.—Differs from the genotype in lack of granular cuticle, absence of the long nonclavate tibiotarsal seta, and in the structure of the mucro. It is dedicated to my colleague, Dr. J. R. Denis, of the University of Dijon, France.

GENUS PROISOTOMA Börner, 1906.

#### ***Proisotoma brisbanensis*, sp. nov.**

(Text fig. 4, *j-l*.)

*Description*.—Length, to 0.5 mm. Colour, bluish-black, lighter ventrally and on legs and furca. Antennae blue-black, as long as the head, ratio of segments I : II : III : IV = 12 : 17 : 20 : 40, antennal sensory organ not observed. Eyes, 6 on each side on dark fields, equal; postantennal organ broadly elliptical, doubly contoured with slight indications of lateral notches, as long as 2 ocelli. Claws alike on all legs, simple without inner tooth; empodial appendage as figured,

ending in a short style; tibiotarsal clavate setae one. Furca short, barely reaching ventral tube, dens ventrally with 7 rounded bosses and 6-7 setae; mucro bidentate, in distal half with a large basal half-moon shaped lamella. Ratio of abdomen III : IV = 5 : 8. Clothing of numerous short, fine, simple setae.

*Locality*.—In numbers on surface of water of Chippeway Bore drains, St. George, Brisbane, Queensland, 9/34 (A. R. B.).

*Remarks*.—This species closely resembles *P. fitchi* Denis, 1934, from Costa Rica, in the form of the mucro, but differs in having only 6 ocelli instead of 8 on each side. It also has a single clavate tibiotarsal seta instead of two, while it further differs in that the claws and empodial appendages are alike on all feet.

Genus ISOTOMA Börner, 1906.

ISOTOMA RAFFI Womersley, 1934.

This species was originally described from specimens from the You Yang Mountains, Victoria. Numerous specimens have since been taken in moss from Mount Osmond, South Australia, 6/34 (H. W.), 7/34 (R. V. S.).

*Isotoma decemoculata*, sp. nov.

(Text fig. 4, *m-p*.)

*Description*.—Length, to 1.0 mm. Colour, whitish. Ocelli, 5 on each side on two adjacent but separated patches of pigment. Facies rather that of *Folsomia*, but abdomen IV separated from V and VI. Antennae half as long again as head, II barely half as long again as I, III slightly shorter than II, IV quite as long as II and III together, almost elliptical and with terminal knob. Postantennal organ elliptical, twice as long as the two anterior ocelli together, doubly contoured and slightly notched. Claws untoothed; empodial appendage with narrow lamella, not reaching to half the claw; tibiotarsus without clavate setae. Furca rather short, not reaching ventral tube, dens twice as long as manubrium, mucro bidentate. Body setae fine simple and fairly long, somewhat longer on apical segments, each abdominal segment with some straight upstanding setae.

*Locality*.—A number of specimens in moss from Glen Osmond, South Australia, 4/34 (R. V. S.), 7/34 (H. W.).

*Remarks*.—Differs from all other species in the number and arrangement of the ocelli.

ISOTOMA GEORGIANA Schäffer, 1891.

In 1934 (Trans. Roy. Soc. S. Aust., vol. lviii, p. 105) the writer recorded this Subantarctic species from the Coorong, South Australia. In June, 1935, I was fortunate in obtaining several specimens from moss at Mount Compass, South Australia, and it has also been brought to me from a fungus from Millbrook Reservoir, South Australia, 6/35 (R. V. S.).

Family ENTOMOBRYIDAE Börner, 1913.

Genus LEPIDOCYRTINUS Börner, 1903.

*Lepidocyrtinus queenslandiae*, sp. nov.

(Text fig. 5, *a-c*.)

*Description*.—Length, 1.25 mm. Colour, uniformly deep brownish-black; legs and furca rather lighter. Ocelli, 8 on each side on dark fields. Antennae two and a half times as long as head, ratio of segments I : II : III : IV = 6 : 9 : 10 : 15, IV and distal part of III annulated, I and II scaled. Thorax III dorsally half as long again as II; abdomen IV three times as long as III. Claws strong, with 3 inner teeth besides the apical tooth; empodial appendage reaching second tooth of claw. Furca long, reaching ventral tube; manubrium shorter than mucrodens, mucro falciform with basal spine. Clothing of normal setae

and scales, latter varied in shape but never acutely pointed, dark-brownish with numerous short longitudinal striations.

*Locality*.—A single specimen taken at Mount Edwards, Brisbane, Queensland, in March, 1934 (A. R. B.).

*Remarks*.—This is the first species of this genus to be recorded for this country.

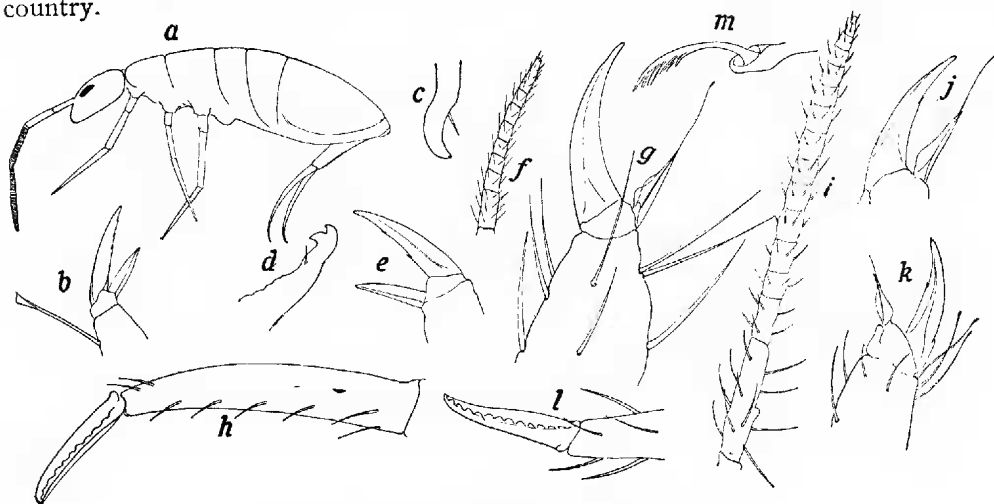


Fig. 5.

- a-c *Lepidocyrtinus queenslandiae*, sp. nov.  
 d-e *Mesira brunnea*, sp. nov.  
 f-h *Arrhopalites aurantiaca*, sp. nov.  
 i-m *Katianna pescotti*, sp. nov.

Genus *MESIRA* Börner, 1903; nec. Schtscherbakow, 1898.

***Mesira brunnea*, sp. nov.**

(Text fig. 5, d-e.)

*Description*.—Length, 1.8 mm. Facies rather that of *Lepidophorella*. Colour, golden-brown, antennae legs furca and slightly laterally on segments bluish. Eyes, 8 on each side on dark fields connected by an anterior dark line. Antennae two and half times as long as head, ratio of segments I : II : III : IV = 5 : 15 : 15 : 23, IV annulated. Claws with two inner teeth besides the apical tooth; empodial appendage as figured. Furca long, reaching ventral tube, manubrium subequal to mucrodens, mucro bidentate with basal spine, apical tooth much smaller than preapical tooth. Thorax II twice as long as III. Body very densely covered with brown scales of varied shape and heavily marked with short longitudinal striations; abdomen IV 5-6 times as long as III.

*Locality*.—Two specimens taken on *Poinsettia* foliage at Brisbane, Queensland, 23/5/33 (A. R. B.).

Suborder SYMPHYPLEONA Börner, 1913.

Family SMINTHURIDAE Lubbock, 1870.

Genus SMINTHURIDES s. str. Börner, 1903.

SMINTHURIDES AQUATICUS (Bourlet, 1843).

In 1932 I recorded the variety *levanderi* (Reuter) of this species from Western Australia. The typical form has now been taken in some numbers on the surface of a pond at Alberton, South Australia, 4/35 (J. G.), and I have had a large number sent to me from Apsley, Victoria, 7/35 (R. T. M. P.).

Genus *ARRHOPALITES* Börner, 1913.

***Arrhopalites aurantiaca*, sp. nov.**

(Text fig. 5, *f-h.*)

*Description.*—Length, to 0.7 mm. Colour, of a light to dark-brownish orange, the sides of a rather dirtier shade; legs and furca white to bluish. Antennae about twice as long as head, ratio of segments I : II : III : IV = 10 : 20 : 23 : 70, III with indefinite wart, IV with 8-9 subdivisions, of which the first and last are twice the length of the others; antennal setae fairly fine and uniform in length. Eyes, 8 on each side on dark fields. Claws long, without inner tooth; empodial appendage with basal inner angular lamella and narrow outer lamella, I and II with long apical bristle which over-reaches tip of claw and is doubtfully clavate; no clavate tibiotarsal setae. Furca long, ratio of mucro to dens = 15 : 40, mucro with 9-10 teeth and an inner lamella. Anal segments with one, abdomen with three long fine sensory setae on each side.

*Locality.*—In moss from Waterfall Gully, South Australia, 5/34 (R. V. S.); Mount Barker, South Australia, 6/34 (H. W.).

*Remarks.*—Very distinct in colour and in having 8 eyes on each side of the head.

Genus *SMINTHURINUS* Börner, 1903.

*SMINTHURINUS OCVLATUS* Schött, 1917.

*Locality.*—A single specimen from Christchurch, New Zealand, 6/35 (L. M.).

*Remarks.*—Apart from Schött's original description of this species from the Queensland material collected by the Mjöberg Expedition to Australia it has not again been met with in this country. It is therefore of interest that it can be recorded from New Zealand. Having only a single specimen, as yet, it is not possible to add anything to Schött's diagnosis.

Genus *KATIANNA* Börner, 1906.

***Katianna pescotti*, sp. nov.**

(Text fig. 5, *i-m.*)

*Description.*—Length, to 1.5 mm. Colour, yellowish with dark eye-fields, apical antennal segments bluish. Antennae twice as long as head, ratio of segments I : II : III : IV = 2 : 4 : 5 : 12½, III with long strong setae and stout outer peg-like organ, IV about twice as long as III with 12-14 divisions. Eyes, 8 on each side on dark fields. Legs with 2-3 clavate tibiotarsal setae. Claws with single inner tooth; empodial appendage with broad inner angular lamella and narrow outer lamella, with apical or subapical bristle which is long and reaches tip of claws on I and II but is shorter on III. Furca normal, dens about three times the length of mucro, mucro as figured. Female genital appendage as in figure. Genital segment with one, abdomen with three long fine sensory setae.

*Locality.*—A few specimens from Port Fairy, Victoria, 7/35 (R. T. M. P.).

*Remarks.*—Dedicated to the finder, Mr. R. T. M. Pescott, of the Victorian Department of Agriculture.

*KATIANNA OCEANIA* var. *SCHÖTTI* Womersley, 1933.

A number of specimens of this form were obtained from moss from the National Park, Belair, South Australia, 5/35 (H. W.).

Genus *PARAKATIANNA* Womersley, 1932.

*PARAKATIANNA SPINATA* Womersley, 1932.

This species has hitherto been known only from Western Australia. Two specimens have recently been obtained from moss from Adelaide, South Australia, 5/35 (H. W.).